Species: *Cryptantha weberi* I.M. Johnst.

  Synonyms – *Oreocarya weberi* (I.M. Johnst.) W.A. Weber

  Common names – Weber's cryptantha; Weber's catseye

Status: Table 1 summarizes the current status of this plant by various ranking entities and defines the meaning of the status.

Table 1. Current status of *Cryptantha weberi*		
Entity	Status	Status Definition
NatureServe	G3	G3—Global ranking of vulnerable - Vulnerable either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation or extinction. Typically 21 to 100 occurrences or between 3,000 and 10,000 remaining individuals.
Colorado Natural Heritage Program (CNHP)	S3	S3- State ranking of vulnerable - Vulnerable either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation or extinction. Typically 21to 100 occurrences or between 3,000 and 10,000 remaining individuals.
USDA Forest Service	None	
USDI Fish and Wildlife Service	Not listed	Not federally recognized under the Endangered Species Act (ESA) as endangered, threatened, proposed, or candidate species.

The 2012 U.S. Forest Service Planning Rule defines Species of Conservation Concern (SCC) as "a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area."(36 CFR 219.9). This overview was developed to summarize information relating to this species' consideration to be listed as a SCC on the Rio Grande National Forest, and to aid in the development of plan components and monitoring objectives.

Distribution, abundance, and population trend on the planning unit:

According to the USDA PLANTS database and NatureServe, *Cryptantha weberi* (*Oreocarya weberi* is listed as a synonym, as indicated above) is a Colorado endemic (USDA NRCS 2015, NatureServe 2015). The PLANTS database indicates that it is known from Saguache, Hinsdale, and Rio Grande Counties (USDA NRCS 2015). NatureServe (2015) states that it's also known from Conejos and probably Costilla Counties. CNHP (2015) data indicate that it is further spread, with element occurrence reports in Gunnison and Mineral Counties (in addition to those listed above).

There are three CNHP element occurrence records of *Cryptantha weberi* within the planning area (please note that there are more than three points on the map, but they are for the same three occurrences). Two of the occurrence reports are considered historical; they were reported in 1977 and have not been revisited. There are another 13 element occurrence reports within Colorado, outside of the planning area (CNHP 2015).

NatureServe (2015) states the species is common in the foothills of Rio Grande and Conejos Counties. It is estimated that there are approximately 50 occurrences in those counties plus a few others in adjacent counties. One occurrence had over 1,000 plants and several others had hundreds of plants (NatureServe 2015). One of the historical element occurrence reports for the planning area notes that 15,500 individuals were observed, and another indicates approximately 1,000 individuals were observed (in 1977) (CNHP 2015). These sites have not been revisited so there are no data available to help determine population trend.

USFS Corporate Database Habitat Type Associated with the Species:

The collection labels for specimens that are at Rocky Mountain Herbarium (RM Herbarium 2015) describe habitat as "ash beds," "cracks in rock on steep slopes," "sparsely vegetated andesite and agglomerate," and "volcanic ash deposits."

The known occurrences on the RGNF are located in Arizona Fescue on Mountain Slopes, Thurber Fescue on Mountain Slopes, and Engelmann Spruce on Mountain Slopes Land Type Associations (LTAs). Given the habitat descriptions for the species, it is likely that the occurrence mapped in the Engelmann Spruce on Mountain Slopes is either in an inclusion within that LTA, or the mapping is slightly skewed and the occurrence is actually in the adjacent Nonvegetated Areas on Mountain Slopes (RGNF GIS data).

Brief description of natural history and key ecological functions:

Cryptantha weberi is a perennial herb described as having stout, stiffly erect stems usually less than 20 cm tall with inconspicuous pubescence of appressed, pustulate hairs. Inflorescence is a tight spike with flowers greater than 5mm in diameter. Nutlets are not smooth (a key diagnostic characteristic for *Cryptantha* species).

Little is known about population demographics for *Cryptantha weberi.* There is no information regarding population parameters or demographic features, such as metapopulation dynamics, life span, age at maturity, recruitment, and survival.

There is insufficient knowledge about *Cryptantha weberi* to determine what factors limit population growth. However, it is assumed that it is limited by available habitat (Durkin 2002). The rate at which colonization and establishment of new populations occurs is unknown and it is unclear what type, size, intensity, or frequency of disturbance regime is important. Genetic concerns, such as the amount of genetic variability between and within the occurrences, have not been studied.

Overview of ecological conditions for recovery, conservation, and viability:

NatureServe (2015) estimates that there are no major threats to this species, at this time. A few populations may be threatened by off-road vehicle use, but many of the populations occur on inaccessible habitat. Plants have been observed in disturbed areas such as around old gravel mines and two-tracks, so it appears that the species is able to tolerate some disturbance (NatureServe 2015).

The element occurrence reports for the occurrences in the planning area note that there was evidence of grazing around one occurrence, but the *Cryptantha weberi* had not been grazed. Overall, there are very few threats identified for the species. Off-road travel and trampling are the only potential threats identified in the element occurrence reports, and they were not impacting the species at the time of reporting. The viability for the one recent report ranked the viability of the occurrence as "fair" due to the small size. The occurrence is healthy but small, with the condition of the occurrence rated as "undisturbed"

Durkin (2002) noted that the roadside and foothills habitat is presumed stable, that no known threats to the existing habitat have been documented, and there are no known threats to this species.

Key ecosystem characteristics and ecological conditions for recovery, conservation, and viability:

Due to this species endemism it is important to maintain the known occurrences. Presently, most threats appear to be at a relatively low and manageable level. The RGNF should strive to maintain these occurrences by applying suggested management practices as follows:

1) Manage habitat - Manage and adjust pressures from any management influences found to be creating unacceptable impacts.

2) Manage environmental stressors - Continue assessing the RGNF's contribution to global climate change and adjust actions where permissible within the Forest Service's legal and regulatory authority. Use tools such as the Forest's Climate Change Scorecard to assess impacts and make positive changes where needed.

Key uncertainties and information needs/gaps:

There are a large number of information gaps and research needs for this species. Re-visiting the known occurrences, estimating current abundance, assessing imminent threats, measuring demographic parameters, studying genetic variability, and determining ecological needs and limitations are of primary importance. The following suggestions are ordered from inventory activities (to determine the current status) to more complex biological studies (to help understand the species):

- Re-visiting and detailed mapping of the known occurrences

- Surveying for new populations

- Defining and measuring habitat and microhabitat characteristics

- Measuring demographic parameters using long-term monitoring plots

- Analyzing genetics to assess gene flow and variability throughout range

- Conducting studies related to reproductive biology, including breeding system, germination trials, dispersal capabilities, pollinator surveys, mycorrhizal associations, and seedbank analyses.

The following is an outline of a monitoring approach that could be used to inform the development of the RGNF Forest Plan revision's monitoring plan. Additionally, areas of research opportunity (beyond the scope of the Forest Plan revision) are suggested below based on key uncertainties about this species.

1) Monitoring: monitoring priority is a judgment determination based on number of occurrences, potential threats, and conservation status. The priority for this species is thought to be low. This is primarily due the apparent lack of threats for this species, and the apparent abundance, but it should be tempered by the species endemism. Existing management practices are not known to be causing detrimental impact. Only limited search effort and monitoring have been conducted so individual occurrences may be vulnerable to unforeseen impacts. Thus, monitoring is suggested as follows:

   a. Search for and document new species occurrences found on the Forest. Ensure that additional occurrences, as well as negative search results, are recorded in the appropriate electronic database. Additional occurrences increase the odds in the confidence of assessing population viability, especially with greater geographic separation. Finding additional occurrences helps inform whether additional monitoring is needed and at what intensity.

   b. Monitor known element occurrences to document presence or absence. Evaluate each occurrence based on appropriate database protocols. Visually document the same populations every 5-7 years (twice in a planning cycle). Consider enlisting an organization such as CNHP to help develop a rapid monitoring technique that is meaningful for trend analysis but is easy to establish and simple to evaluate.

   c. Make visual observations to assess if any impacts are occurring to the known occurrence. Assess the type, source, frequency, and magnitude of the impact. Develop a strategy at the appropriate time for mitigating impacts (eliminate, move, delay, or reduce the impact).

2) Research:

   a. Reproductive biology, autecology, and demography - there are many unknowns about this species' life cycle suggesting numerous areas of potential research.

   b. Genetics - an accurate estimate of this species' genetic vulnerability is unknown.

c. Disturbance - there are unknowns about the role and types of disturbance and their possible effects.

Key literature:

Colorado Natural Heritage Program (CNHP). 2015. Element Occurrence Records for the Rio Grande National Forest. Unpublished data on file at the Supervisor's Office for the Rio Grande National Forest. Monte Vista, Colorado. Data compiled 2/2015.

Durkin, Paula. 2002. Region 2 Sensitive Species Evaluation Form. Cryptantha weberi/Weber's cryptantha.

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Higgins, L.C. 1971. A Revision of Cryptantha subgenus Oreocarya. Brigham Young University Biological Series – Volume XIII, Number 4, March 1971.

NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org. (Accessed: October 1, 2015).

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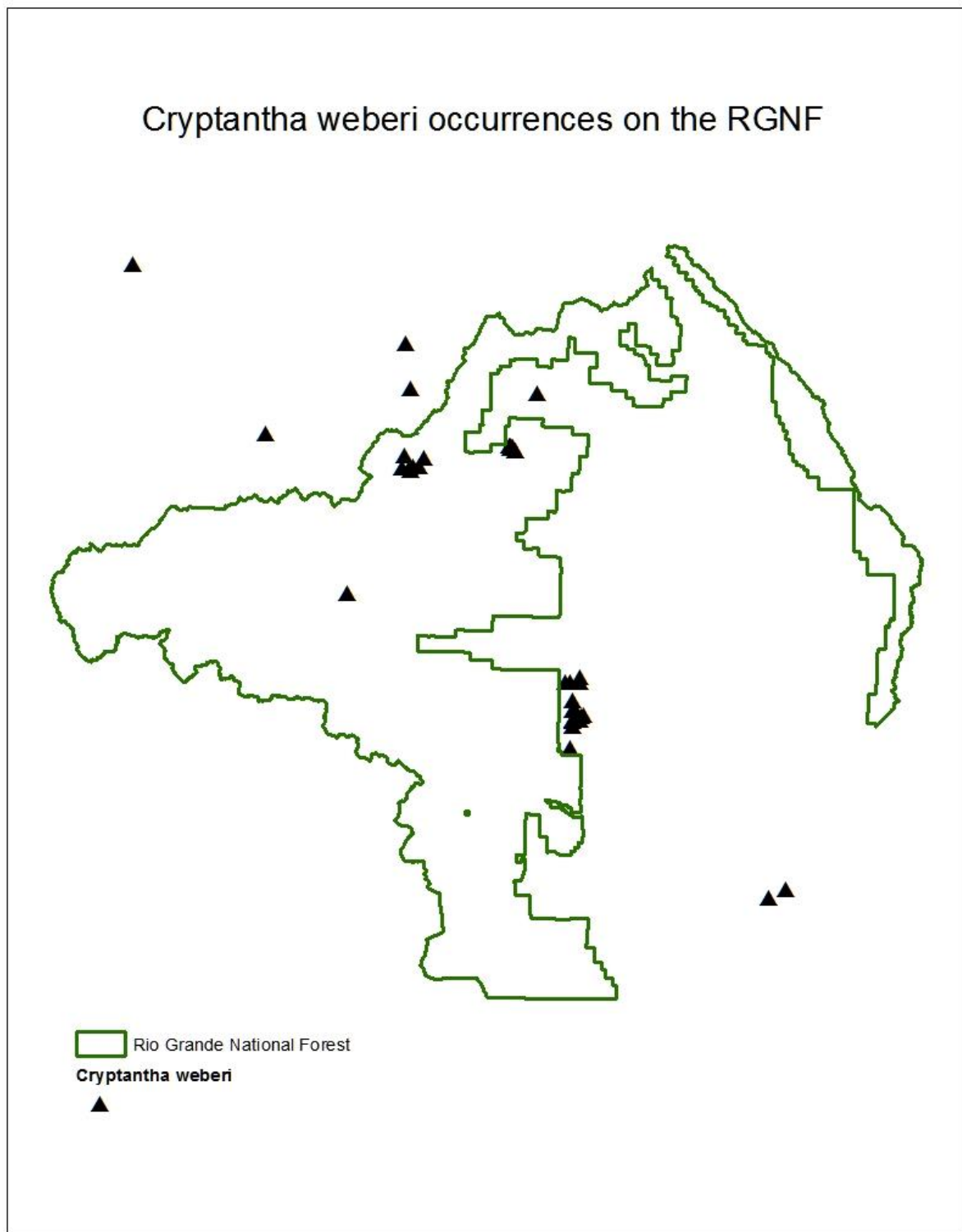
Map of Known Occurrences:

Figure 1. *Cryptantha weberi* **occurrences on the RGNF.**